QinetiQ

Distributed Planning

Andrew Preece 01684 897252 apreece@QinetiQ.com

September 2001

Report Documentation Page		
Report Date 25SEP2001	Report Type N/A	Dates Covered (from to) 25SEP2001 - 27SEP2001
Title and Subtitle Distributed Planning		Contract Number
		Grant Number
		Program Element Number
Author(s) Preece, Andrew		Project Number
		Task Number
		Work Unit Number
Performing Organization Name(s) and Address(es) QinetiQ		Performing Organization Report Number
Sponsoring/Monitoring Agency Name(s) and Address(es) EOARD PSC 802 BOX 14 FPO 09499-0014		Sponsor/Monitor's Acronym(s)
		Sponsor/Monitor's Report Number(s)
Distribution/Availability S Approved for public release		
Technology for C4ISTAR,	The Second Annual Advance	M. These papers are from the Harnessing Advanced ed Technology Conference, held 25-27 September nal document contains color images.
Abstract		
Subject Terms		
Report Classification unclassified		Classification of this page unclassified
Classification of Abstract unclassified		Limitation of Abstract UU
Number of Pages		,

Presentation theme:

Despite £M's spent on planning systems why is planning usually conducted by military staff meeting around a table and using a combination of pen/paper, whiteboards and MS Office?

QinetiQ

Agenda

- What is Planning?
- Why is supporting Planning difficult?
- Issues for current Planning support systems
- Why are 'low-tech' solutions in evidence?
- Recommendations for supporting Planning

Agenda

- What is Planning?
- Why is supporting Planning difficult?
- Issues for current Planning support systems
- Why are 'low-tech' solutions in evidence?
- Recommendations for supporting Planning

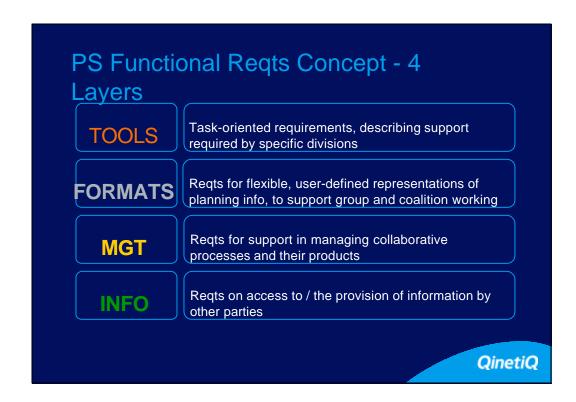
QinetiQ

Most people would agree that Planning...

- Is a complex, human-directed process
- Is driven by goals, requirements & constraints of a given campaign
- Involves
 - receipt and understanding of direction & guidance
 - decision-making & human judgement
 - communication & collaboration amongst groups of experts in their individual fields
 - development of common understanding, awareness and intent

Planning is...

- A process specified in doctrine and SOPs
- A complex group activity
- A design/problem-solving activity
- An example of decision-making grounded by judgement and experience



Agenda

- What is Planning?
- Why is supporting Planning difficult?
- Issues for current Planning support systems
- Why are 'low-tech' solutions in evidence?
- Recommendations for supporting Planning

QinetiQ

Computers don't naturally fit the problem

Planning

- Knowledge intensive
- Complex & multi-faceted
- Each plan & planning process is unique
- Planning, monitoring and replanning is dynamic

Computers

- handle data/information
- best in pre-defined domains
- During application development it is easier to prescribe a process
- Dynamic variables are defined in advance

Systems Engineering is non-trivial

- Knowledge elicitation/task analysis is difficult
- Limited access to users
- Littoral, linear descriptions of processes
- Doctrine doesn't convey flexibility of processes
- Interpretation is often too-littoral
- Access to products-in-progress is difficult
- Emphasis placed on products rather than processes

QinetiQ

Agenda

- What is Planning?
- Why is supporting Planning difficult?
- Issues for current Planning support systems
- Why are 'low-tech' solutions in evidence?
- Recommendations for supporting Planning

Current Planning support systems

- Tools mainly support op/tactical domains
- Emphasis placed on finding discrete, localised solutions & implementation
- Limited attention paid to
 - Problem framing and understanding
 - Plan monitoring and maintenance
- Emphasis on process/activities rather than problem solving

QinetiQ

Technology-drive/narrow-focus leads to

- Passive experts
- Reduced adaptability
- Hidden mechanisms & logic
- Data push rather than interpretation
- Style over function
- Data deluge

[Klein 2001]

Agenda

- What is Planning?
- Why is supporting Planning difficult?
- Issues for current Planning support systems
- Why are 'low-tech' solutions in evidence?
- Recommendations for supporting Planning

QinetiQ

So why is MS Office so popular?

- Process neutral
- Full inter-application integration
- Pervasive & familiar
- Applications are user-experience scalable

It demonstrates key characteristics of an appropriate support technology

Q: £M's, A:?

- Current enterprise-wide planning systems are constraining, inflexible, stultifying and generally inappropriate
- Round-table discussions, MS Office & Whiteboarding meets a significant proportion of user requirements!
- Majority of investment targeted at specific, discrete planning aids (solution finding) at the operational/tactical level
- The complexity and knowledge intensive nature of planning is hard to define in concrete requirements terms

QinetiQ

Agenda

- What is Planning?
- Why is supporting Planning difficult?
- Issues for current Planning support systems
- Why are 'low-tech' solutions in evidence?
- Recommendations for supporting Planning

Message based on 5+ yrs research

- ARP 19k then ARP 13
- Al Planning approaches through to Process and Info Management solutions (PlanMan)





Main problem with PlanMan was process-product disjoint

QinetiQ

Functional Reqts - 4 Layers examples

TOOLS

e.g. textual, temporal and spatial planning, replanning and planning for contingencies

FORMATS

e.g. process description, plan description, product templates (briefings, documents), task checklists

MGT

e.g. product mgt, process mgt, group brainstorming and authoring; plan reuse, decision traceability

INFO

e.g. staff status, status of Op resources, geo, int, log, financial, historical, open-source, etc.

Recommendations

- Focus on enabling technologies
 - tools that a target organisation can evolve and maintain
 - framework applications
- De-couple logic and process from core systems
 - do not hardwire or prescribe
- Harness OO techniques for user not just developer benefit
 - Interfaces that directly manipulate business objects
 - OO for organisational agility not re-use
- Understand what doesn't change

QinetiQ

Recommendations

- Focus on group decision-making
 - human factors does not just mean GUI design
 - Planning environments must be collaborative
- Allow support and (multiple) representation(s) of processes and products - and the means to translate
- Shift emphasis from process support to problem solving
- Support full planning spectrum crisis thro' deliberate
- Discrete (integrable) solutions are necessary

Software Engineers - Remember...

Planning is a complex, dynamic, flexible, humandirected group activity

Technology can help if employed appropriately

QinetiQ

Questions?